

hydrologically accessible SAV could enhance the bay scallop population. SAV in areas with low current velocities will potentially be more isolated resulting in lower bay scallop recruitment.

The amount of SAV in North Carolina was estimated to be between 134,000 and 200,000 acres around 1990 (Ferguson and Wood 1994). However, the current spatial distribution and acreage of SAV may be somewhat different since some areas that historically supported SAV were not mapped, and changes may have occurred in mapped areas since the original mapping. Along the Atlantic coast, North Carolina supports more SAV than any other state, except Florida. The majority of SAV occurs in eastern Pamlico Sound and Core Sound in high salinity waters (Figure 8.2 a-b). These areas were mapped in 1990 (Ferguson and Wood 1994). Bogue Sound was mapped in 1981 (Carraway and Priddy 1983), and seagrass beds south of Bogue Sound have not been mapped at all. Because light is the primary limiting factor affecting its distribution, SAV is restricted to relatively shallow waters, usually less than 1 m in depth at low tide.

Although there are reports of large-scale losses of SAV in North Carolina's low salinity tributaries on the mainland side of Pamlico Sound (North Carolina Sea Grant 1997; J. Hawkins, DMF, personal comment, 2003), the high salinity grass beds behind the barrier islands that are inhabited by bay scallops appear relatively stable (Ferguson and Wood 1994). Changes in the amount or condition of high salinity seagrass beds will have a direct impact on bay scallop populations. Protection, enhancement, and restoration of this habitat should be high priorities for management of bay scallop populations.

The greatest threat to SAV is large-scale nutrient enrichment and sediment loading, which increases algal growth and turbidity, reducing light penetration, which negatively impacts SAV growth, survival, and productivity (Goldsborough and Kemp 1988; Kenworthy and Haunert 1991; Funderburk et al. 1991; Stevenson et al. 1993). Catastrophic losses of seagrass beds have been correlated with these water quality problems in other states in the past (Twilley et al. 1985; Orth et al. 1986; Durako 1994).

Sediment, epiphytes, or drift algae can also cover the surface of seagrass blades (Dennison et al. 1993; SAFMC 1998; Fonseca et al. 1998). Elevated nitrogen concentrations have also been shown to be toxic to eelgrass (Burkholder et al. 1992). In North Carolina, most of the low salinity areas that have experienced large reductions in SAV coverage (Tar-Pamlico River and Neuse River) are also designated Nutrient Sensitive Waters. Once SAV is lost, increased turbidity and sediment destabilization can result in accelerated shoreline erosion and make SAV recolonization more difficult (Durako 1994; Fonseca 1996). Therefore, prevention of any additional high salinity SAV loss through water quality maintenance and improvement is a high priority for bay scallop management.